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HEDMAN & COSTIGAN P.C. 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036			LAIOS, MARIA J	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.





in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The conductive spacer claimed on line 11 is located in figure 1 which is considered prior art by the applicant. This feature is not in figures 3-7 which depict the embodiments of the current invention.

5. Claims 2 and 4-13 are also rejected because they depend upon a rejected claim.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. (EP 0629 015 A1) in view of Applicant's prior art (see applicant's specification on Page 6 line 24- Page 7 line 5).

With respect to claim 1, Faita et al. discloses a stack comprising a plurality of fuel cells (Figure 6); a cooling fluid (which provided in the internal ducts and used for cooling); a plurality of metal bipolar plates (2, Figure 2) and gaskets (8, Figure 3) having passage openings (2 and 9) for inlet and outlets of the reactant gas, and for injecting and discharging a cooling fluid (5). Each fuel cell comprises and ion exchange membrane (6) with two sides, a current collector (14) on each side of the membrane (figure 6). The gasket (8) framing the perimeter of the current collector (Figure 6- the gasket is next to the current collector therefore it will cover the perimeter

of the current collector. Each fuel cell delimited by the bipolar polar plates (Figure 6) but fail to disclose a cooling device comprises an electrically conductive spacer. Applicant's admitted prior art discloses a cooling device comprising an electrical conductive spacer and the cooling fluid flows through the cooling device (Page 6 line 29-31, the bipolar plates and the conductive spacer make up the cooling device, 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the cooling device of Admitted Prior Art in the fuel cell of Faita because the spacer maintains the electrical continuity between adjacent bipolar plates and the fluid flowing through the cooling device keeps the fuel cell at the temperature required for it to run efficiently.

With respect to claim 6, Faita et al fails to explicitly disclose the water is circulating in a closed circuit. However, Faita et al discloses the forced circulation of demineralized water to control the temperature (Page 10 line 41) as in a cooling circuit (page 2 line 10). This would indicate that the circuit is closed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have water circulating in a closed circuit in order to make the fuel cell mobile and to save cost on reusing the water.

8. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al (EP 0629 015 A1) in view of Admitted Prior Art (see Applicant's Specification pages 6 line 6 to

page 10 line 14 and Figures 1 and 2) as applied to claim 1 above, and further in view of Abd Elhamid et al (US 2005/0267004 A1).

With regard to claim 4, Faita discloses the structural components as discussed above in claim 1 and incorporated herein, and teaches the bipolar plate (1) may be constructed of stainless steel (page 5 line 19) but fails to disclose the composition of the stainless steel. Abd Elhamid et al. teaches a PEMFC in which the bipolar plates have a stainless steel composition of at least 16 percent by weight of chromium, nickel is at least 20 percent by weight and molybdenum is at least 3 percent by weight in order to provide a high bulk electrical conductivity and corrosion resistance (Paragraph 34).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use stainless steel having a composition of at least 16 percent by weight of chromium, nickel at least 20 percent by weight and molybdenum at least 3 percent by weight for the bipolar plates of the electrochemical cell stack of Faita in order to provide corrosion resistance electrical conductivity as taught by Abd Elhamid et al.

With regard to claim 5, Abd Elhamid et al. further explains that the bipolar plate is a metal substrate (Paragraph 55) this metal substrate/electrically conductive element can be made of stainless steel 316L (Paragraph 38).

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. (EP 0629 015 A1) in view of Applicant's prior art (see applicant's specification on Page 6 line 24- Page 7 line 5) as applied to claim1 above, and further in view of Baldauf et al (US 2003/0027031 A1).



10. Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. (EP 0629 015 A1) in view of Applicant's prior art (see applicant's specification on Page 6 line 24- Page 7 line 5). as applied to claim1 above, and further in view of Kikuchi et al. (US 2003/0162078 A1). With regard to claim 2, Faita modified by Applicant's prior art discloses the structural components as discussed above in claim 1, but fails to mention a bipolar plate closest to the negative terminal is free of passage openings. Kikuchi et al. discloses a fuel cell in which there are terminal plates/bipolar plates (34a, 34b) free of openings for only the plate that is closest to each of the ends of the cell. It would have been obvious to one of ordinary skill in the art at the time of the invention to place the terminal plates near the ends of the cell without openings in order to prevent fluids from passing near the terminal ends.

1. Claims 9 and 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. (EP 0629 015 A1) in view of Applicant's prior art (see applicant's specification on Page 6 line 24- Page 7 line 5) as applied to claim1 above, and further in view of Schmid et al (US 6080503) and Wald et al. (US 7087339 B2).

With respect to claim 9, Faita et al. modified by Applicants admitted prior is discussed above and incorporated herein but fails to disclose the membrane with opening being larger in size than the gaskets around the membrane. Schmid et al. discloses a PEM fuel cell and discloses the openings of the membrane (5MEA figure 5a, the passageway (30) are aligned with the holes in the membrane) is larger than the passage ways (30) which allows for the bonding agent/sealing

element (50) to encapsulate the edges of the membrane to prevent damage to the membrane (col. 8 lines 48-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the membrane of Faita with the membrane of Schmid because Schmid teaches the opening of the membrane larger than those of the holes that allow for the passage of fluids this prevents the damage of the membrane by allowing for the bonding agent/sealing agent to protect the membrane.

However Faita et al. modified by Applicants admitted prior art and Schmid fail to disclose the sealing element as a non conductive O-ring or gasket. Wald et al. discloses a fuel cell membrane and teaches a gasket can be made of any suitable elastomeric material including silicones, thermoplastic elastomers and elastomeric adhesives col. 6 lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the adhesive sealing agent of Schmid et al. with a gasket because both are known to be effective sealants in fuel cells and Wald et al. teaches that they are recognized equivalents for the same purpose. See MPEP 2144.06.

With respect to claim 10, Wald et al. further discloses the gasket to be EPDM rubber (col. 6 lines 5).

2. Claims 11-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. (EP 0629 015 A1) in view of Applicant's prior art (see applicant's specification on Page 6 line 24-Page 7 line 5), Schmid et al (US 6080503) and Wald et al. (US 7087339 B2) as applied to claim 9 above, and further in view of Barton et al. (US 6423439 B1).

The disclosures of Faita, Applicant's admitted prior art, Schmid, and Wald et al. are discussed above and incorporated herein.

With respect to claim 11, Faita, Applicant's admitted prior art, Schmid, and Wald et al. fail to disclose the non conductive elastomer material is in liquid form and cured by UV or thermal treatment.

With regard to claim 11, Barton et al discloses an elastomer material for a sealant material/non conductive material is flow processable/liquid at the moment of assemble and polymerized by thermal treatment (col. 3 lines 55-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the elastomer of Wald with the liquid polymer of Barton et al because both are known to be effective sealants in electrolytes and the Wald et al. references teaches that they are art recognized equivalents for the same purpose. See MPEP 2144.06.

With regard to claim 12 and 13, Barton et al discloses a liquid injection moldable compound for example silicones (col. 5 line 25) and from the applicants specification on page 11 "A suitable material is given by liquid silicon resins, which maintain a low hardness and a good elasticity also after completing the curing process" It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the elastomer of Wald with the liquid polymer of Barton et al because both are known to be effective sealants in electrolytes and the Wald et al. references teaches that they are art recognized equivalents for the same purpose. See MPEP 2144.06.



***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA J. LAIOS whose telephone number is (571)272-9808. The examiner can normally be reached on Monday - Thursday 9:30 - 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

